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Chin

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(54) **COMBINATION SLIDE**

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A63B 9/00 (2006.01)

(52) **U.S. Cl.**
CPC ***A63G 21/04*** (2013.01)

(58) **Field of Classification Search**
CPC A63G 21/00; A63G 21/04; A63G 21/16; A63B 1/00; A63B 1/005; A63B 9/00
USPC 472/13, 116, 117; 104/53, 69, 70
See application file for complete search history.

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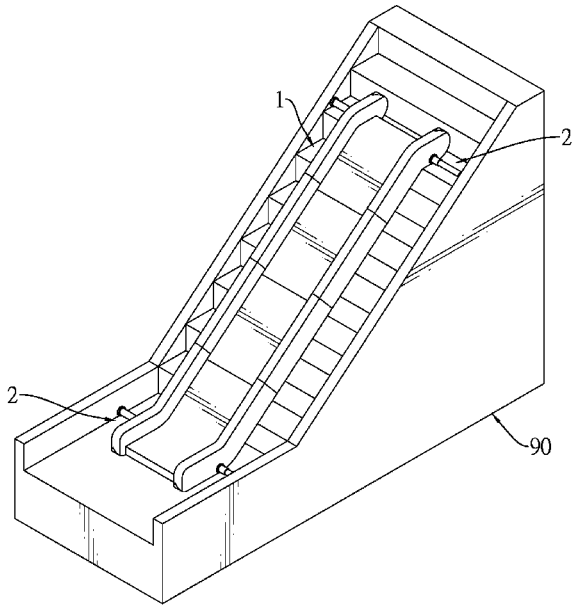
(57) **ABSTRACT**

A combination slide has a slide body and two pressing rods. The slide body has a head member, a tail member and multiple connecting members. The head member has a head quick-release engaging element. The tail member has a tail quick-release engaging element. Each connecting member has an upper intermediate quick-release engaging element engaged detachably with the head quick-release engaging element and a lower intermediate quick-release engaging element engaged detachably with the tail quick-release engaging element of the tail member or the upper intermediate quick-release engaging element of an adjacent connecting member. The combination slide can be quickly assembled or disassembled.

10 Claims, 9 Drawing Sheets



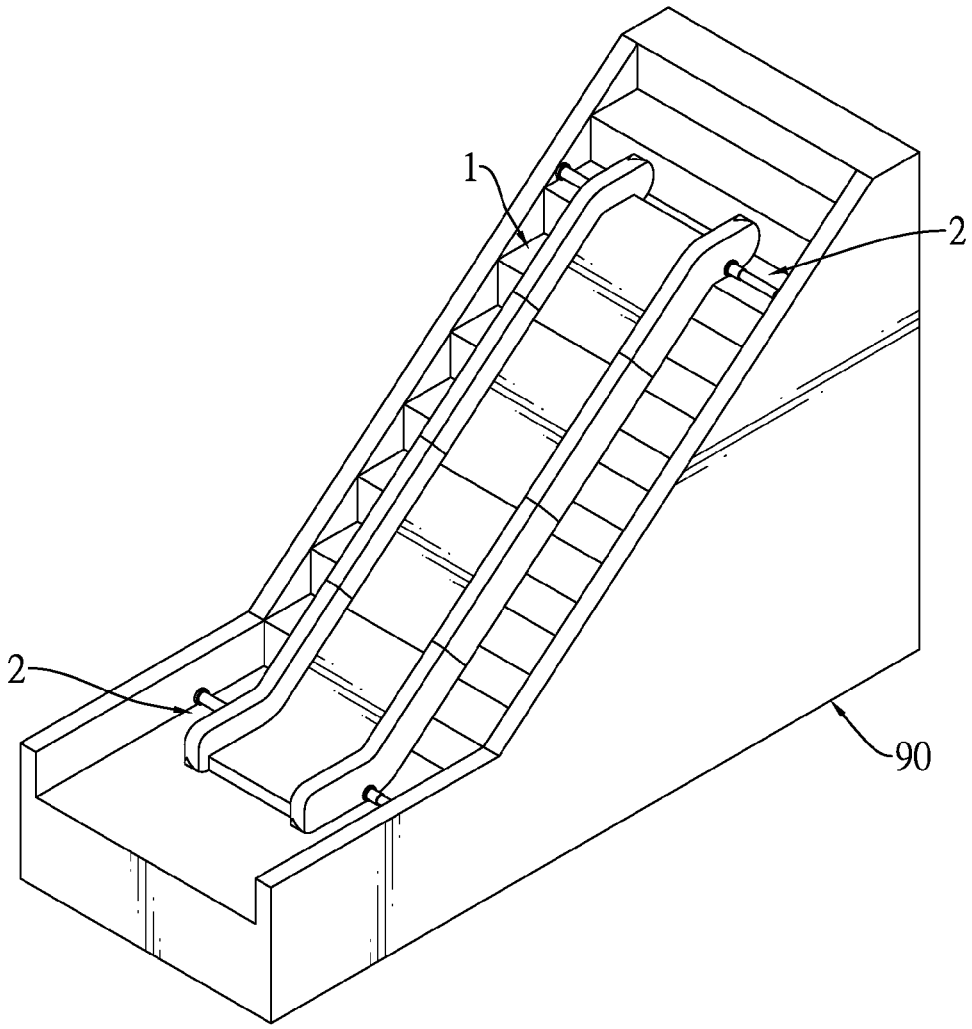
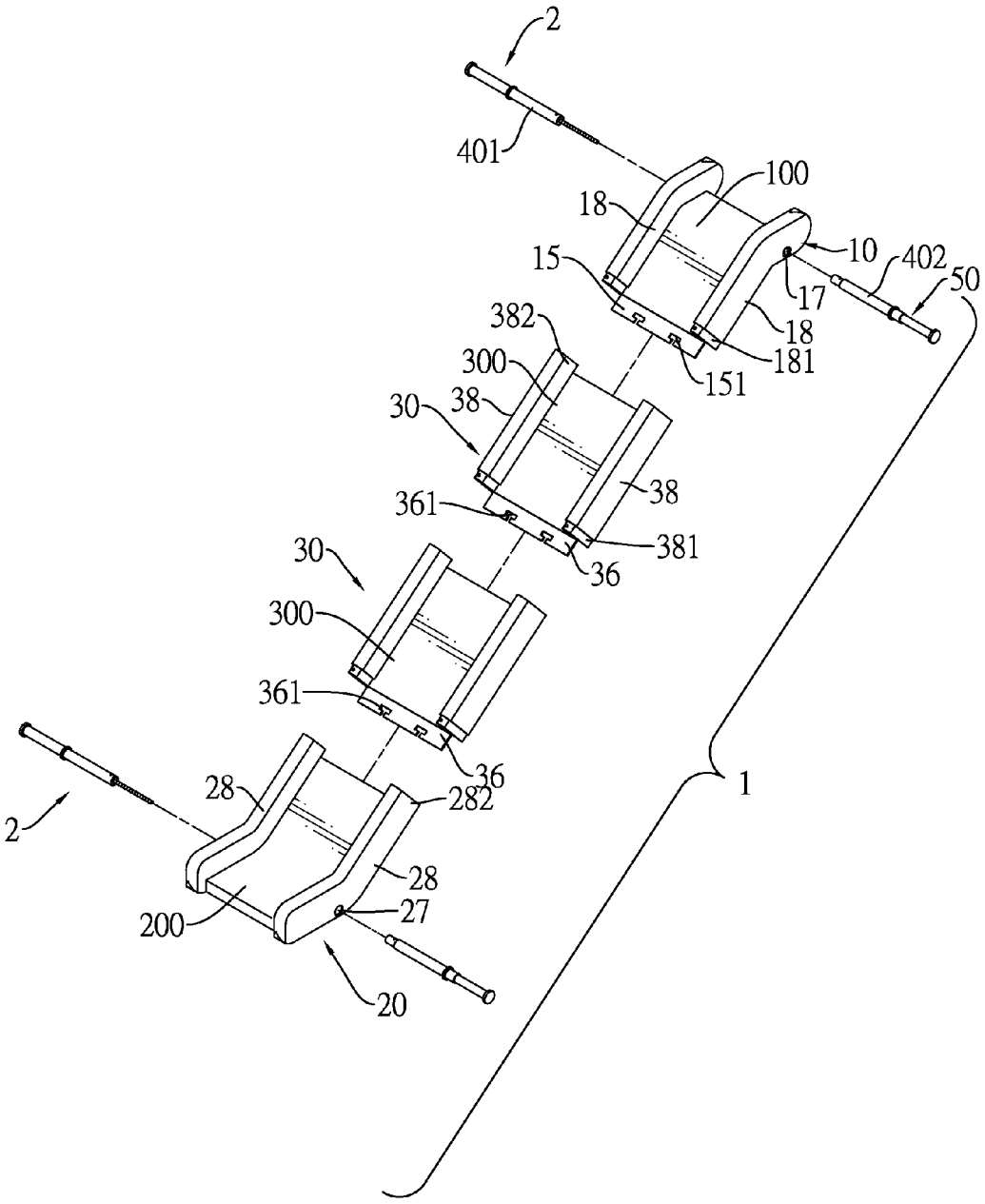


FIG.1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401
100
18
15
10
402
50
17
18
181
151
382
300
30
38
38
361
381
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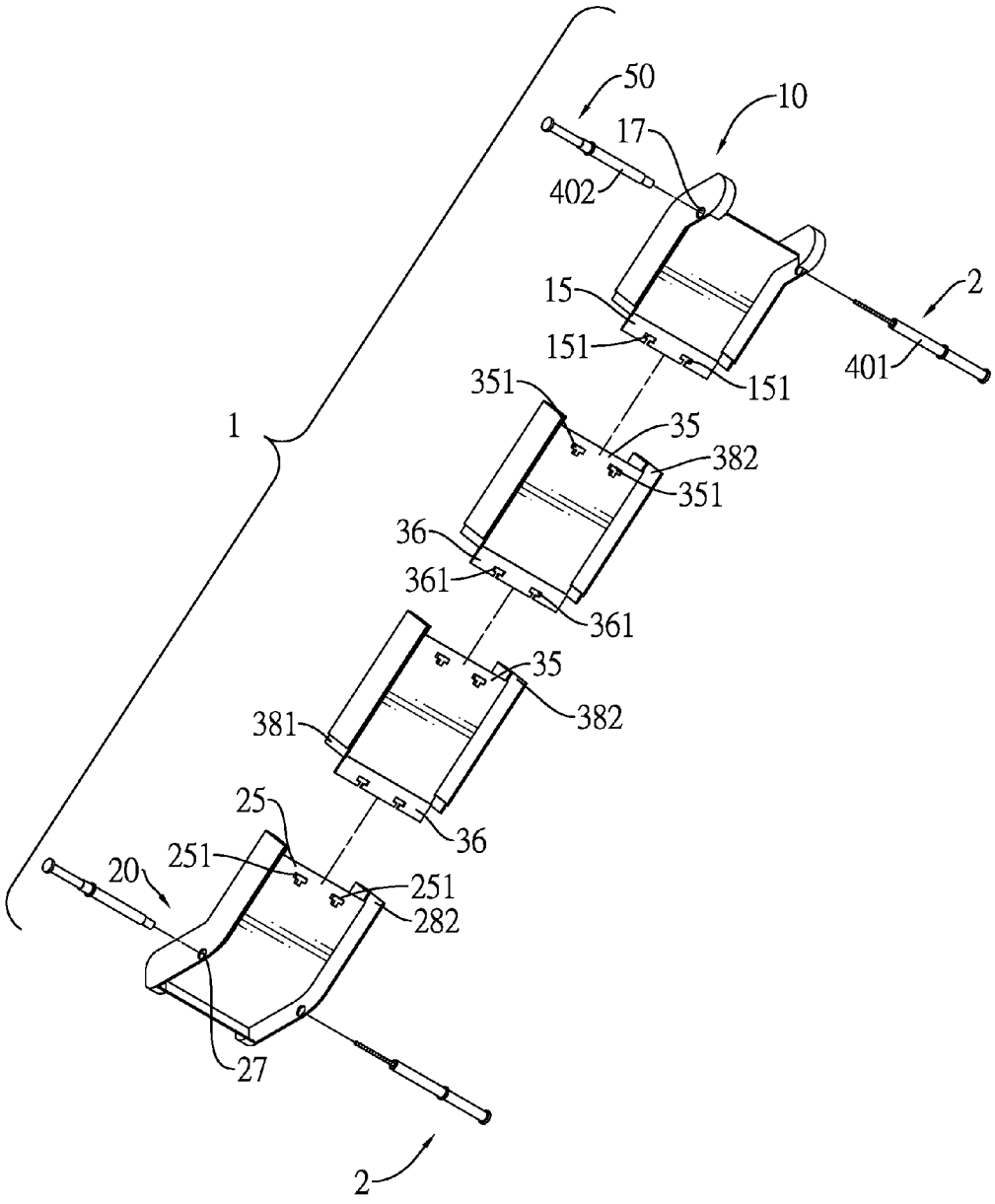
300
361
36
28
282
2
28
27
200
20
1

FIG.2


50
10
17
402
15
2
151
401
151
351
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361
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35
381
382
25
36
251
20
251
282
27
2

FIG.3

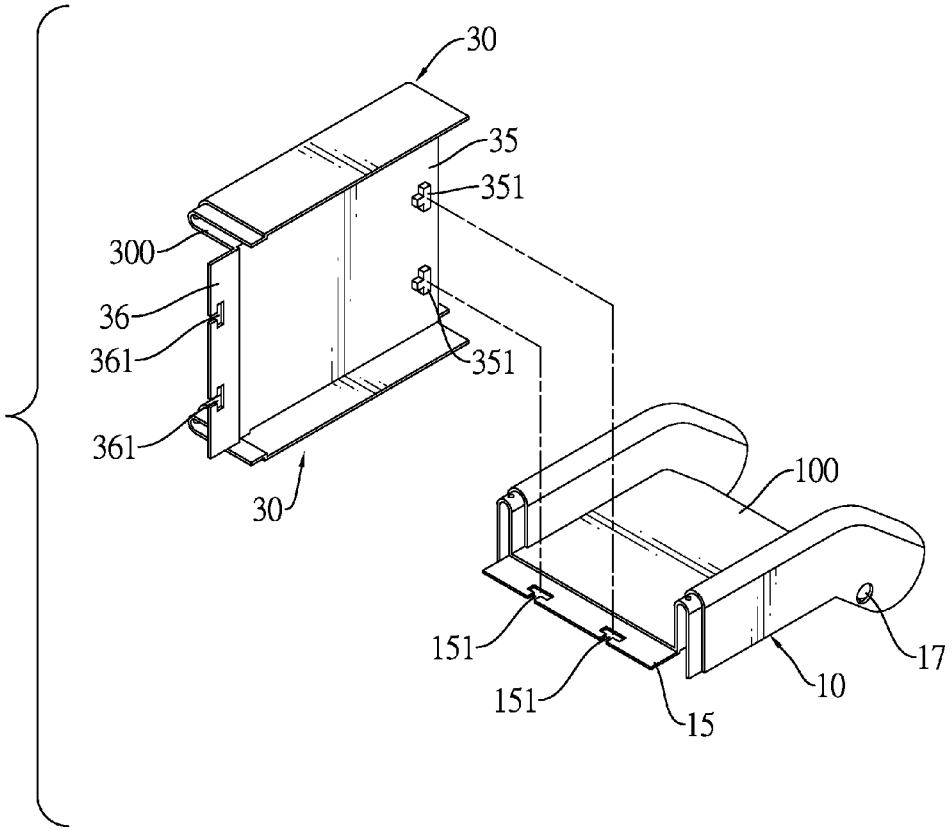
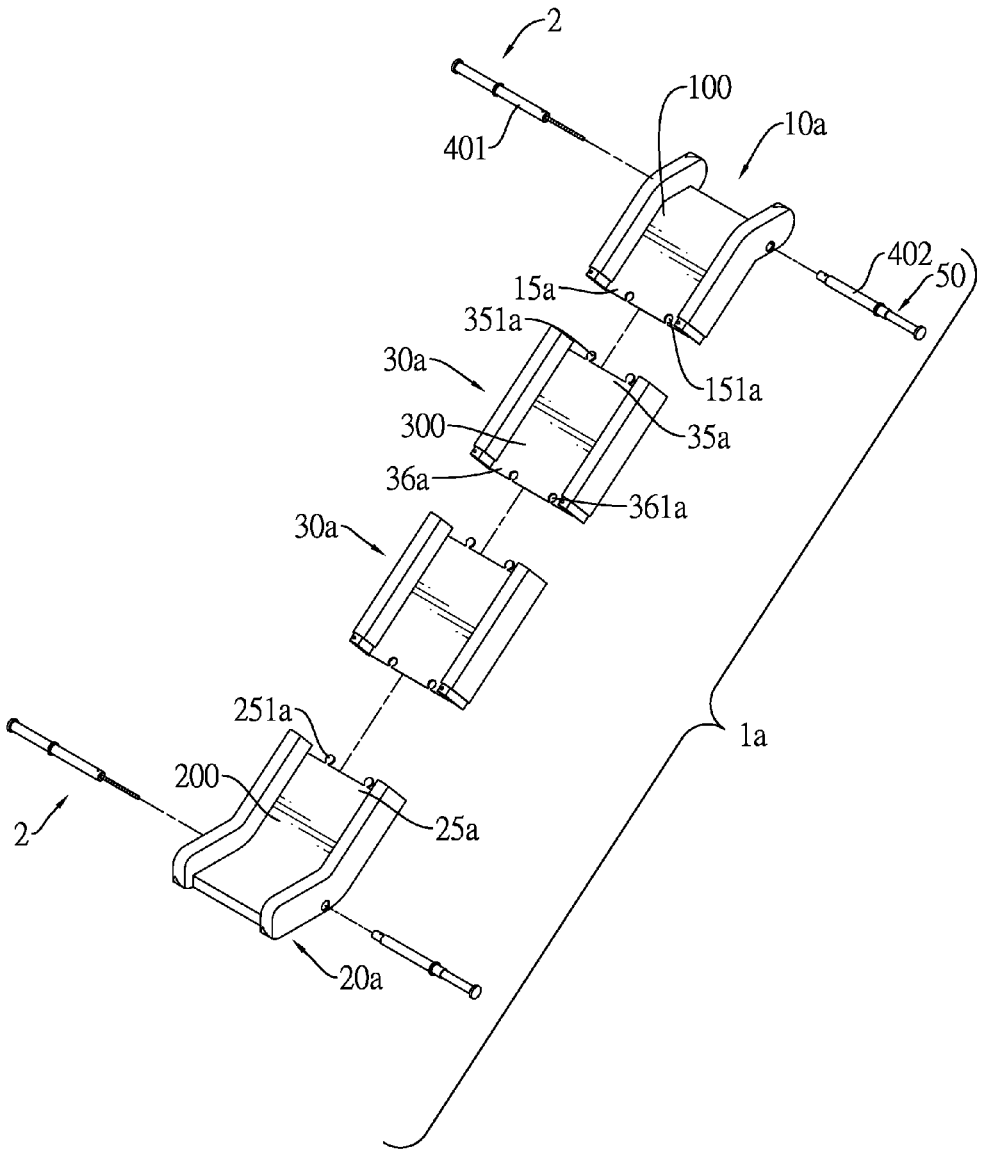


FIG.4


2
100
10a
401
402
50
15a
351a
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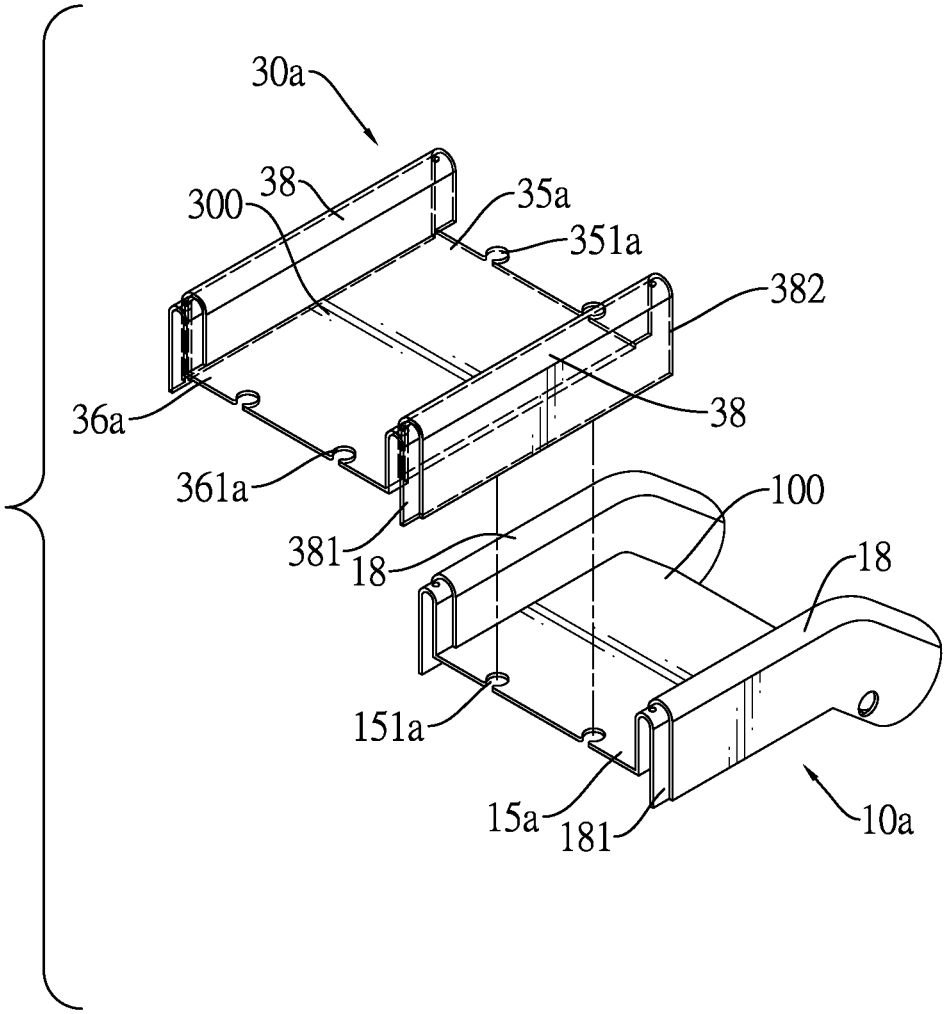
300
35a
36a
361a
30a
251a
1a
200
25a
2
20a

FIG.5


30a
38
300
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351a
382
36a
38
361a
100
381
18
18
151a
15a
181
10a

FIG.6

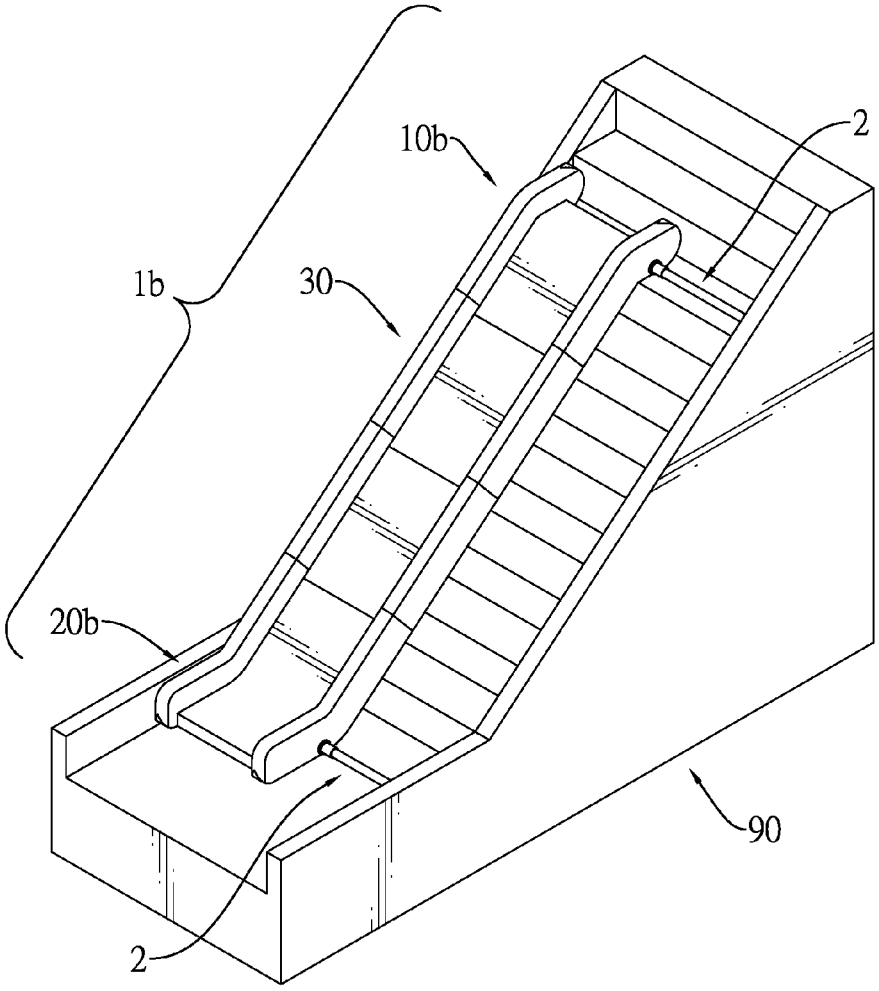

FIG.7

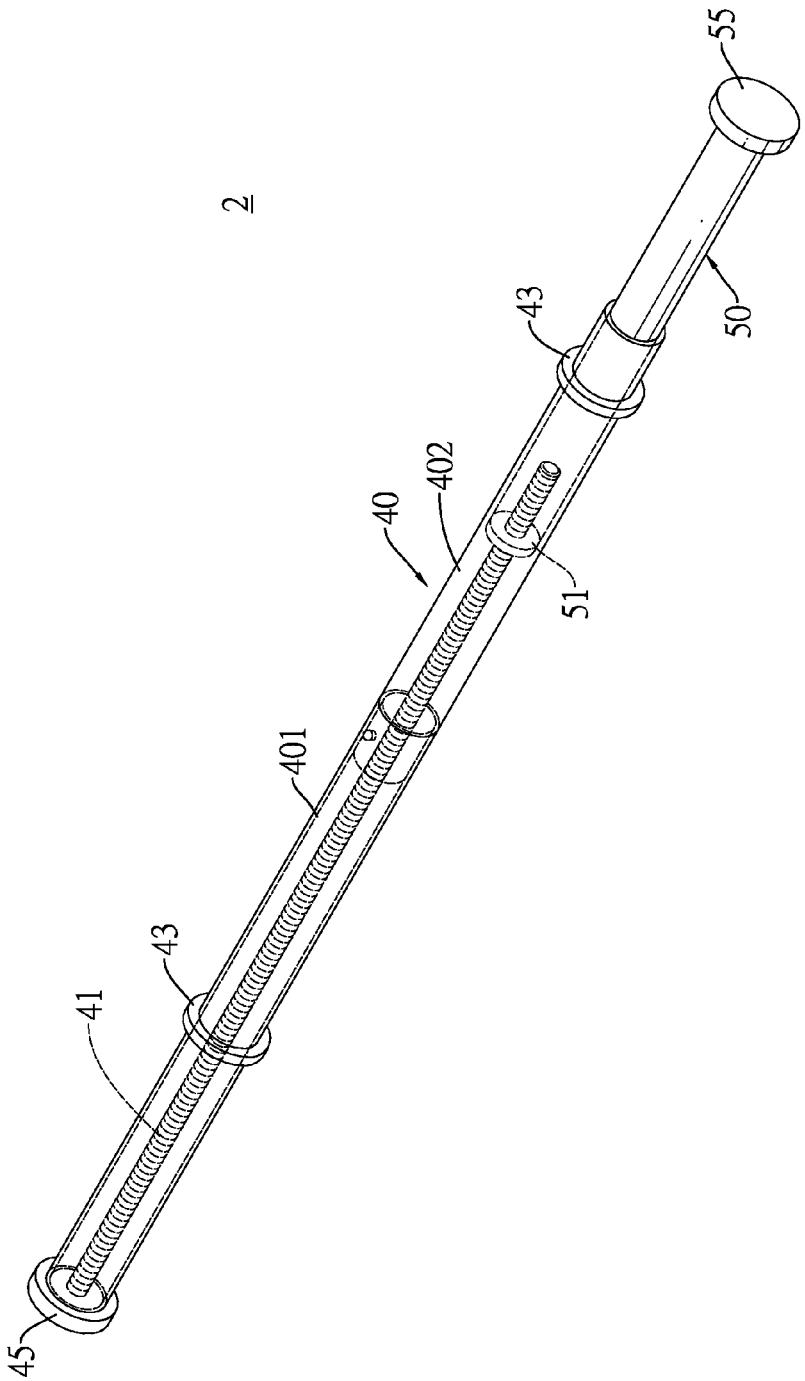

FIG.8

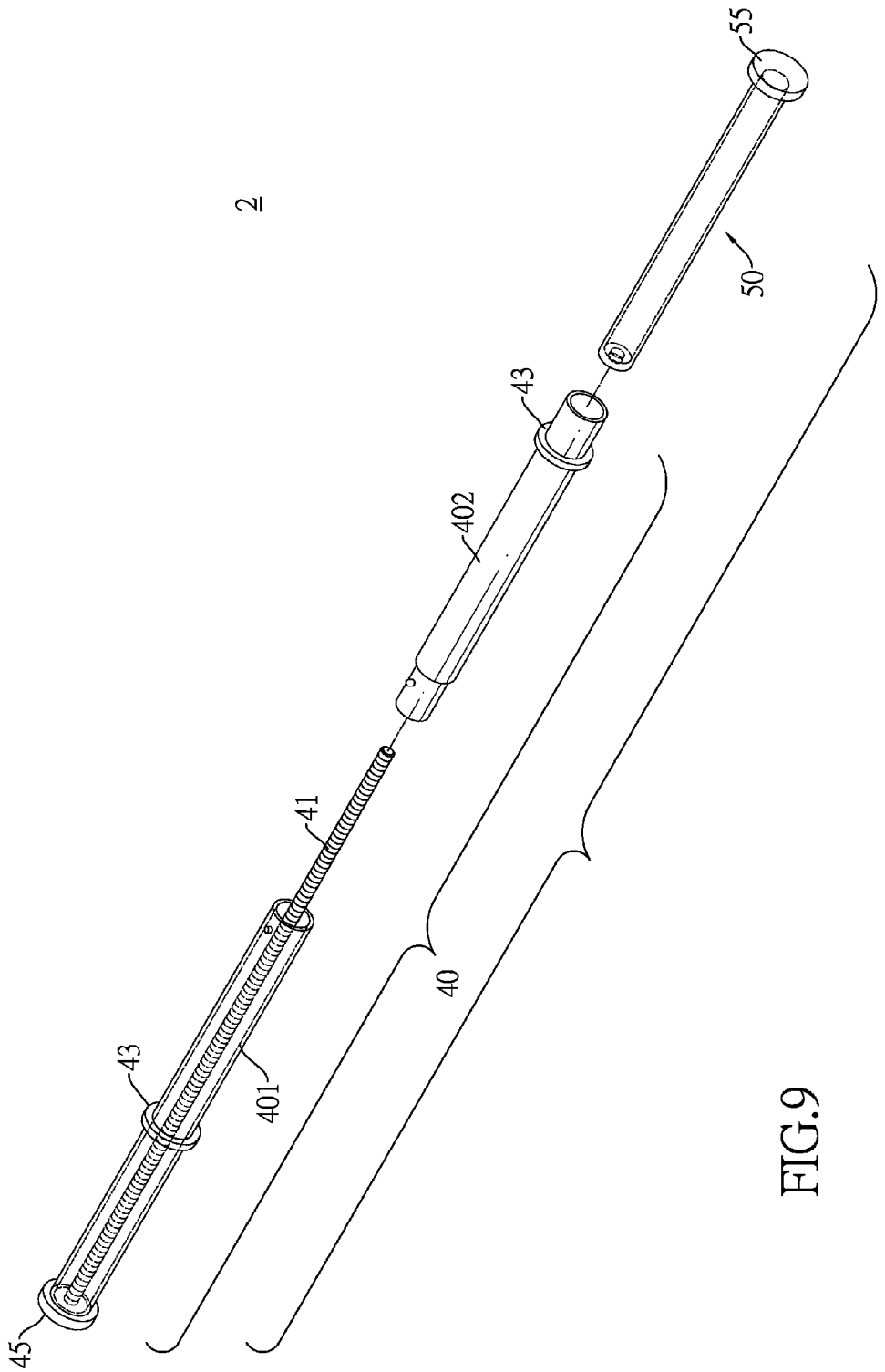

FIG.9

COMBINATION SLIDE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a slide, and more particularly to a combination slide that has a slide body and a pressing rod such that the combination slide may be mounted in different types of staircases.

2. Description of Related Art

Slides are set outdoors in parks, schools or playgrounds for children to play thereon. However, some parents worry about safety of their children playing outside. Therefore, a conventional combination slide has been developed for children to play the with the combination slide indoors. The conventional combination slide may be disassembled into several components for storage.

However, components of the conventional combination slide are connected by complicated manners and therefore disadvantage assembling and disassembling thereof. Furthermore, width of the conventional combination slide is constant and cannot fit all widths of staircases. When the width of the conventional combination slide is less that of a staircase, the conventional combination slide cannot be mounted securely on the staircase and easily slips laterally, which results in safety problems.

To overcome the shortcomings, the present invention provides a combination slide to mitigate or obviate the aforementioned problems.

SUMMARY OF THE INVENTION

The main objective of the invention is to provide a combination slide that has a slide body and a pressing rod such that the combination slide may be mounted in different types of staircases.

A combination slide has a slide body and two pressing rods. The slide body has a head member, a tail member and multiple connecting members. The head member has a head quick-release engaging element. The tail member has a tail quick-release engaging element. Each connecting member has an upper intermediate quick-release engaging element engaged detachably with the head quick-release engaging element and a lower intermediate quick-release engaging element engaged detachably with the tail quick-release engaging element of the tail member or the upper intermediate quick-release engaging element of an adjacent connecting member. The combination slide can be quickly assembled or disassembled.

Other objectives, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a first embodiment of a combination slide in accordance with the present invention set on a staircase;

FIG. **2** is an exploded perspective view of the combination slide in FIG. **1**;

FIG. **3** is another exploded perspective view of the combination slide in FIG. **1**;

FIG. **4** is an exploded perspective view of a head member and a connecting member of the combination slide in FIG. **1**;

FIG. **5** is an exploded perspective view of a second embodiment of the combination slide in accordance with the present invention

FIG. **6** an exploded perspective view of a head member and a connecting member of the combination slide in FIG. **5**;

FIG. **7** is a perspective view of a third embodiment of the combination slide in accordance with the present invention set on a stair case;

FIG. **8** is a perspective view of a pressing rod of the combination slide of the first, second and third embodiment; and

FIG. **9** is an exploded perspective view of the pressing rod in FIG. **8**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIGS. **1** and **2**, a first embodiment of a combination slide in accordance with the present invention is set on a staircase **90** and comprises a slide body **1** and two pressing rods **2**.

The slide body **1** is capable of being disassembled and has a head member **10**, a tail member **20** and multiple connecting members **30**.

The head member **10** has a head sliding channel **100**, two head rails **18**, two head mounting notches **181**, a head quick-release engaging element **15** and an upper assembling hole **17**.

The head sliding channel **100** is defined in the head member **10**.

The head rails **18** are formed respectively on opposite sides of the head member **10** such that the head sliding channel **100** is located between the head rails **18**.

The head mounting notches **181** are U-shaped and are defined respectively on top ends of the head rails **18**.

The head quick-release engaging element **15** is formed on a bottom end of the head member **10**, may be a protruding portion and has multiple T-shaped engaging slots **151** defined through the head quick-release engaging element **15**.

The upper assembling hole **17** is defined laterally through the head member **10**.

The tail member **20** has a tail sliding channel **200**, two tail rails **28**, two tail mounting protrusions **282**, a tail quick-release engaging element **25** and a lower assembling hole **27**.

The tail sliding channel **200** is defined in the tail member **20**.

The tail rails **28** are formed on the tail member **20** so that the tail sliding channel **200** is located between the tail rails **28**.

The tail mounting protrusions **282** are U-shaped and are formed on and protrude respectively from top ends of the tail rails **28**.

The tail quick-release engaging element **25** is formed on a top end of the tail member **20**, may be a recess portion corresponding to the protruding portion and has multiple T-shaped projections **251** formed on the tail quick-release engaging element **25**.

The lower assembling hole **27** is defined laterally through the tail member **20**.

With further reference to FIGS. **3** and **4**, the connecting members **30** are connected detachably between the head member **10** and the tail member **20**. Adjacent two of the connecting members **30** are connected detachably to each other. Each connecting member **30** has an intermediate sliding channel **300**, two intermediate rails **38**, two intermediate mounting protrusions **382**, two intermediate mounting notches **381**, an upper intermediate quick-release engaging element **35** and a lower intermediate quick-release engaging element **36**.

The intermediate sliding channel **300** is defined in the connecting member **30** and communicates with one of the head sliding channel **100**, the tail sliding channel **200** and the intermediate sliding channel **300** of an adjacent connecting member **30**.

The intermediate rails **38** are formed on connecting member **30** such that the intermediate sliding channel **300** is located between the intermediate rails **38**.

The intermediate mounting protrusions **382** are U-shaped, are formed on and protrude respectively from top ends of the intermediate rails **38**. The intermediate mounting protrusions **382** of the connecting member **30** connecting to the head member **10** are detachably engaged respectively with the head mounting notches **181**.

The intermediate mounting notches **381** are U-shaped, are defined respectively in bottom ends of the intermediate rails **38** and are detachably engaged respectively with the tail mounting protrusions **282** of the tail member **20** or respectively with the intermediate mounting protrusions **382** of an adjacent connecting member **30**.

The upper intermediate quick-release engaging element **35** is formed on a top end of the connecting member **30** and may be a recess portion corresponding to the protruding portion. The upper intermediate quick-release engaging element **35** of the connecting member **30** connecting to the head member **10** is engaged detachably with the head quick-release engaging element **15**. The upper intermediate quick-release engaging element **35** has multiple T-shaped engaging projections **351** formed on the upper intermediate quick-release engaging element **35**. The T-shaped engaging projections **351** of the upper intermediate quick-release engaging element **35** of the connecting member **30** connecting to the head member **10** are detachably engaged respectively with the T-shaped engaging slots **151** of the head quick-release engaging element **15**.

The lower intermediate quick-release engaging element **36** is formed on a bottom end of the connecting member **30**, may be a protruding portion corresponding to the recess portion and is engage detachably with the tail quick-release engaging element **25** of the tail member **20** or the upper intermediate quick-release engaging element **35** of an adjacent connecting member **30**. The lower intermediate quick-release engaging element **36** has multiple T-shaped engaging slots **361** defined through the lower intermediate quick-release engaging element **36** and detachably engaged respectively with the T-shaped projections **251** of the tail quick-release engaging element **25** of the tail member **20** or respectively with the T-shaped engaging projections **351** of the upper intermediate quick-release engaging element **35** of an adjacent connecting member **30**.

The pressing rods **2** are telescopic, are mounted respectively on the head member **10** and the tail member **20** and are capable of pressing the combination slide against the staircase **90**. Therefore, the combination slide is mounted securely on the staircase. The pressing rods **2** are mounted respectively through the upper assembling hole **17** and the lower assembling hole **27**.

With further reference to FIGS. **8** and **9**, each pressing rod **2** has an outer tube **40** and an inner tube **50**.

The outer tube **40** has an outside tube portion **401**, an intermediate tube portion **402**, two abutment rings **43** and a screw **41**.

The outside tube portion **401** is hollow and is mounted on one of two opposite sides of the head member **10** or the tail member **20**, may be mounted in the upper assembling hole **17** or the lower assembling hole **27** and has a pressing end, a mounting hole **4011** and a pressing pad **45**. The mounting hole **4011** is defined in the outside tube portion **401**. The pressing pad **45** is mounted on the pressing end and may tightly press against the staircase **90**.

The intermediate tube portion **402** is hollow, is mounted on the other side of the head member **10** or the tail member **20**, may be mounted in the upper assembling hole **17** or the lower assembling hole **27**, is mounted detachably in the mounting hole of the outside tube portion **401** and has a through hole **4021** defined through the intermediate tube portion **402**.

The abutment rings **43** are respectively mounted around the outside tube portion **401** and the intermediate tube portion **402** and respectively abut the sides of the head member **10** or the tail member **20**.

The screw **41** is mounted securely in the mounting hole **4011** of the outside tube portion **401** and extends in the through hole **4021** of the intermediate tube portion **402**.

The inner tube **50** is mounted telescopically in the intermediate tube portion **402** of the outer tube **40** and has a pressing end, a connecting end, a nut **51** and a pressing pad **55**. The nut **51** is mounted on the connecting end of the inner tube **50** and is engaged rotatably with the screw **41**. The pressing pad **55** is mounted on the pressing end of the inner tube **50** and may tightly press against the staircase **90**.

With further reference to FIGS. **5** and **6**, a second embodiment of the combination slide in accordance with the present invention is similar to the first embodiment. The head quick-release engaging element **15***a* of the head member **10***a* of the second embodiment has multiple Ω-shaped engaging slots **151***a*. The tail quick-release engaging element **25***a* of the tail member **20***a* has multiple Ω-shaped engaging projections **251***a*. The upper intermediate quick-release engaging element **35** of each connecting member **30** has multiple Ω-shaped engaging projections **351***a* corresponding to the Ω-shaped engaging slots **151***a* and multiple Ω-shaped engaging slots **361***a* corresponding to the Ω-shaped engaging projections **251***a*, **351***a*.

With further reference to FIG. **7**, a third embodiment of the combination slide in accordance with the present invention is similar to the first embodiment. However, the head member **10***b* and the tail member **20***b* of the third embodiment are implemented without assembling holes. The pressing rods **2** are implemented without abutment rings **43**. The pressing pad **45** on the pressing end of the outer tube **40** tightly presses against one side of the head member **10***b* or the tail member **10***b*. The pressing tab **55** of the inner tube **50** tightly presses against the staircase **90**.

The head member **10**, tail member **20** and connecting member **30** may be connected or disconnected quickly through the head quick-release engaging element **15**, quick-release engaging element **25**, upper intermediate quick-release engaging element **35** and lower intermediate quick-release engaging element **36**. Therefore, the combination slide may be assembled or disassembled quickly. Furthermore, pressing rods **2** press the combination slide tightly against the staircase **90**, which prevents the combination slide from inadvertently slipping on the staircase **90**.

Even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only. Changes may be made in the details, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.

What is claimed is:

1. A combination slide comprising:

a slide body being capable of being disassembled and having

a head member having

a head sliding channel defined in the head member; and

a head quick-release engaging element formed on a bottom end of the head member;

a tail member having

a tail sliding channel defined in the tail member; and

a tail quick-release engaging element formed on a top end of the tail member; and

multiple connecting members connected detachably between the head member and the tail member, adjacent two of the connecting members are connected detachably to each other, and each connecting member having

an intermediate sliding channel defined in the connecting member and communicating with one of the head sliding channel, the tail sliding channel and the intermediate sliding channel of an adjacent connecting member;

an upper intermediate quick-release engaging element formed on a top end of the connecting member, wherein the upper intermediate quick-release engaging element of the connecting member connecting to the head member is engaged detachably with the head quick-release engaging element; and

a lower intermediate quick-release engaging element formed on a bottom end of the connecting member and engaged detachably with the tail quick-release engaging element of the tail member or the upper intermediate quick-release engaging element of an adjacent connecting member; and

two pressing rods being telescopic and mounted respectively on the head member and the tail member for pressing the combination slide against a staircase.

2. The combination slide as claimed in claim 1, wherein

the head quick-release engaging element is a protruding portion;

the tail quick-release engaging element is a recess portion corresponding to the protruding portion;

each upper intermediate quick-release engaging element is a recess portion corresponding to the protruding portion; and

each lower intermediate quick-release engaging element is a protruding portion corresponding to the recess portion.

3. The combination slide as claimed in claim 2, wherein

the head quick-release engaging element has multiple T-shaped engaging slots defined through the head quick-release engaging element;

the tail quick-release engaging element has multiple T-shaped projections formed on the tail quick-release engaging element;

the upper intermediate quick-release engaging element of each connecting member has multiple T-shaped engaging projections formed on the upper intermediate quick-release engaging element; the T-shaped engaging projections of the upper intermediate quick-release engaging element of the connecting member connecting to the head member are detachably engaged respectively with the T-shaped engaging slots of the head quick-release engaging element; and

the lower intermediate quick-release engaging element of each connecting member has multiple T-shaped engaging slots defined through the lower intermediate quick-release engaging element and detachably engaged respectively with the T-shaped projections of the tail quick-release engaging element of the tail member or respectively with the T-shaped engaging projections of the upper intermediate quick-release engaging element of an adjacent connecting member.

4. The combination slide as claimed in claim 3, wherein

the head member has an upper assembling hole defined laterally through the head member;

the tail member has a lower assembling hole defined laterally through the tail member;

the pressing rods are mounted respectively through the upper assembling hole and the lower assembling hole and each pressing rod has

an outer tube having

an outside tube portion mounted on one of two opposite sides of the head member or the tail member, mounted in the upper assembling hole or the lower assembling hole and having

a pressing end;

a mounting hole defined in the outside tube portion; and

a pressing pad mounted on the pressing end;

an intermediate tube portion mounted on the other side of the head member or the tail member, mounted in the upper assembling hole or the lower assembling hole, mounted detachably in the mounting hole of the outside tube portion and having a through hole defined through the intermediate tube portion;

two abutment rings respectively mounted around the outside tube portion and the intermediate tube portion and respectively abutting the sides of the head member or the tail member; and

a screw mounted securely in the mounting hole of the outside tube portion and extends in the through hole of the intermediate tube portion; and

an inner tube mounted telescopically in the intermediate tube portion of the outer tube and having

a pressing end;

a connecting end;

a nut mounted on the connecting end of the inner tube and is engaged rotatably with the screw; and

a pressing pad mounted on the pressing end of the inner tube.

5. The combination slide as claimed in claim 3, wherein

the pressing rods are mounted respectively through the upper assembling hole and the lower assembling hole and each pressing rod has

an outer tube having

an outside tube portion mounted on one of two opposite sides of the head member or the tail member and having

a pressing end;

a mounting hole defined in the outside tube portion; and

a pressing pad mounted on the pressing end and tightly presses against one side of the head member or the tail member;

an intermediate tube portion mounted on the other side of the head member or the tail member and having a through hole defined through the intermediate tube portion; and

a screw mounted securely in the mounting hole of the outside tube portion and extends in the through hole of the intermediate tube portion; and

an inner tube mounted telescopically in the intermediate tube portion of the outer tube and having
a pressing end;
a connecting end;
a nut mounted on the connecting end of the inner tube and is engaged rotatably with the screw; and
a pressing pad mounted on the pressing end of the inner tube.

6. The combination slide as claimed in claim **3**, wherein
the head member has
two head rails formed respectively on opposite sides of the head member such that the head sliding channel is located between the head rails; and
two head mounting notches being U-shaped and defined respectively on top ends of the head rails;
the tail member has
two tail rails formed on the tail member so that the tail sliding channel is located between the tail rails; and
two tail mounting protrusions being U-shaped and formed on and protruding respectively from top ends of the tail rails
each connecting member has
two intermediate mounting protrusions being U-shaped, formed on and protruding respectively from top ends of the intermediate rails, wherein the intermediate mounting protrusions of the connecting member connecting to the head member are detachably engaged respectively with the head mounting notches; and
two intermediate mounting notches being U-shaped, defined respectively in bottom ends of the intermediate rails **38** and detachably engaged respectively with the tail mounting protrusions of the tail member or respectively with the intermediate mounting protrusions of an adjacent connecting member.

7. The combination slide as claimed in claim **2**, wherein
the head quick-release engaging element has multiple Ω-shaped engaging slots defined through the head quick-release engaging element;
the tail quick-release engaging element has multiple Ω-shaped projections formed on the tail quick-release engaging element;
the upper intermediate quick-release engaging element of each connecting member has multiple Ω-shaped engaging projections formed on the upper intermediate quick-release engaging element; the Ω-shaped engaging projections of the upper intermediate quick-release engaging element of the connecting member connecting to the head member are detachably engaged respectively with the Ω-shaped engaging slots of the head quick-release engaging element; and
the lower intermediate quick-release engaging element of each connecting member has multiple Ω-shaped engaging slots defined through the lower intermediate quick-release engaging element and detachably engaged respectively with the Ω-shaped projections of the tail quick-release engaging element of the tail member or respectively with the Ω-shaped engaging projections of the upper intermediate quick-release engaging element of an adjacent connecting member.

8. The combination slide as claimed in claim **7**, wherein
the head member has an upper assembling hole defined laterally through the head member;
the tail member has a lower assembling hole defined laterally through the tail member;
the pressing rods are mounted respectively through the upper assembling hole and the lower assembling hole and each pressing rod has
an outer tube having
an outside tube portion mounted on one of two opposite sides of the head member or the tail member, mounted in the upper assembling hole or the lower assembling hole and having
a pressing end;
a mounting hole defined in the outside tube portion; and
a pressing pad mounted on the pressing end;
an intermediate tube portion mounted on the other side of the head member or the tail member, mounted in the upper assembling hole or the lower assembling hole, mounted detachably in the mounting hole of the outside tube portion and having a through hole defined through the intermediate tube portion;
two abutment rings respectively mounted around the outside tube portion and the intermediate tube portion and respectively abutting the sides of the head member or the tail member; and
a screw mounted securely in the mounting hole of the outside tube portion and extends in the through hole of the intermediate tube portion; and
an inner tube mounted telescopically in the intermediate tube portion of the outer tube and having
a pressing end;
a connecting end;
a nut mounted on the connecting end of the inner tube and is engaged rotatably with the screw; and
a pressing pad mounted on the pressing end of the inner tube.

9. The combination slide as claimed in claim **7**, wherein
the pressing rods are mounted respectively through the upper assembling hole and the lower assembling hole and each pressing rod has
an outer tube having
an outside tube portion mounted on one of two opposite sides of the head member or the tail member and having
a pressing end;
a mounting hole defined in the outside tube portion; and
a pressing pad mounted on the pressing end and tightly presses against one side of the head member or the tail member;
an intermediate tube portion mounted on the other side of the head member or the tail member and having a through hole defined through the intermediate tube portion; and
a screw mounted securely in the mounting hole of the outside tube portion and extends in the through hole of the intermediate tube portion; and
an inner tube mounted telescopically in the intermediate tube portion of the outer tube and having
a pressing end;
a connecting end;
a nut mounted on the connecting end of the inner tube and is engaged rotatably with the screw; and
a pressing pad mounted on the pressing end of the inner tube.

10. The combination slide as claimed in claim **7**, wherein
the head member has
two head rails formed respectively on opposite sides of the head member such that the head sliding channel is located between the head rails; and
two head mounting notches being U-shaped and defined respectively on top ends of the head rails;

the tail member has

two tail rails formed on the tail member so that the tail sliding channel is located between the tail rails; and

two tail mounting protrusions being U-shaped and formed on and protruding respectively from top ends of the tail rails

each connecting member has

two intermediate mounting protrusions being U-shaped, formed on and protruding respectively from top ends of the intermediate rails, wherein the intermediate mounting protrusions of the connecting member connecting to the head member are detachably engaged respectively with the head mounting notches; and

two intermediate mounting notches being U-shaped, defined respectively in bottom ends of the intermediate rails **38** and detachably engaged respectively with the tail mounting protrusions of the tail member or respectively with the intermediate mounting protrusions of an adjacent connecting member.

* * * * *